

INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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S-E-C-R-E-T

50X1-HUM

COUNTRY	USSR	REPORT	
SUBJECT	1. Plant for Electronic Tube Cathodes and Filaments, Moscow 2. Electro-Vacuum Tube Plant, Saratov	DATE DISTR.	9 October 1964
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None of the Moscow production facilities mentioned in the text or Comment can be further identified. 50X1-HUM  
With reference to paragraph one of the text, there is no Nizhegorodsk subway station.

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GROUP 1  
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(Note: Field distribution indicated by "#".)

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1. A plant for electronic tube cathodes and filaments was located in the Eastern section of Moscow, North of the Nizhegorodskaya Shosse, and in the vicinity of a subway station (probably the Nizhegorodskaya stantsiya) which was opposite a large new movie theater, built with concrete and painted white.<sup>1</sup> The plant was in an old red-brick building and gave the appearance of a convent. The plant was subordinate to the Fedorov Microwave Plant complex and was said to be the only plant in the USSR (in 1957) producing filament wires and emission pastes for Soviet electron tube plants. It also produced wire resistors, but their process was not observed. 50X1-HUM
2. The emission paste produced at this plant consisted of two compounds: BaCO<sub>3</sub> (40%) and SrCO<sub>3</sub> (60%). These compounds were obtained through industrial processing of chemically impure basic materials, and were subjected to a chemical purification process at the plant; the raw materials were dissolved and precipitated with ammonia. The shape and size of the crystals were not controlled. Only, a practical control test was made with a "lab diode" apparatus, which could be disassembled. (See Annex A, Figure 1.) If an emission current was obtained in conformance with a prescribed norm the emission paste was dispatched to the plants. The recipients were usually not satisfied with the quality of the paste, but had no choice other than to accept it and attempt to improve it if the means were available. The paste was sent out in consecutively numbered batches, but aging of the paste was not controlled by the plant.
3. The plant also produced, on a moderate scale, cathodes for receiver tubes. They were coated and sprayed in a spray box with standard air spray guns. Flat cathodes were mounted on a frame, round ones on a turntable. The portions not to be sprayed received a vacuum wax coating, which was later removed. (See Annex A, Figure 2.) A small number of cathodes was coated by a cataphoretic process; however this was not the prevalent production method at the plant.

#### Cataphoretic Spraying Process for Filament Wires

4. Another piece of equipment at this plant in 1957 was a Soviet developed and manufactured machine for the cataphoretic covering of the filament wires. This machine functioned so well that a similar one was set up in the Tesla-Roznov Electronics Tube Plant, to the satisfaction of the engineers there. The Soviet machine was employed for directly-heated cathodes which were covered in the first stage of the process with a type of "gold bronze" and in the next stage with Ba-Sr emission paste in a cataphoretic process. (See Annexes B and C.)

#### Materials for Radar Tube Windows

5. In 1957 the Soviets were using glass and mica for radar tube windows, but were experiencing high losses because of the low quality of the materials available. Studies by the Czech Research Institute for Vacuum Electrotechnology (VUVET), Hloubetin, with beryllium oxide had also not gotten very far. [ ] knew nothing of Soviet work on this material.

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Electro-Vacuum Tube Plant, Saratov

6. In 1961, Wanci (fnu), the technical director of Tesla-Roznov, visited this plant. At that time it had a production line of carcinotrons and travelling wave tubes. This was a very large plant which was located in a former armored vehicle factory. According to Wanci the Saratov plant had sent in 1961 documentation and machinery for the manufacture of six-cm Klystrons for Vesna type equipment to China.

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1. ☐ Comment:

☐ referred to it as the Ioffe Filament Plant, since the technical director at that time was research engineer Ioffe (fnu), who was also an expert and working on semiconductor research at his own institute. It is possible that the name of the plant actually refers to Academician Abram F. Ioffe, Director of Institute of Semiconductors, born in 1880.

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ANNEX A

Apparatus for Testing and Control of Emission Paste

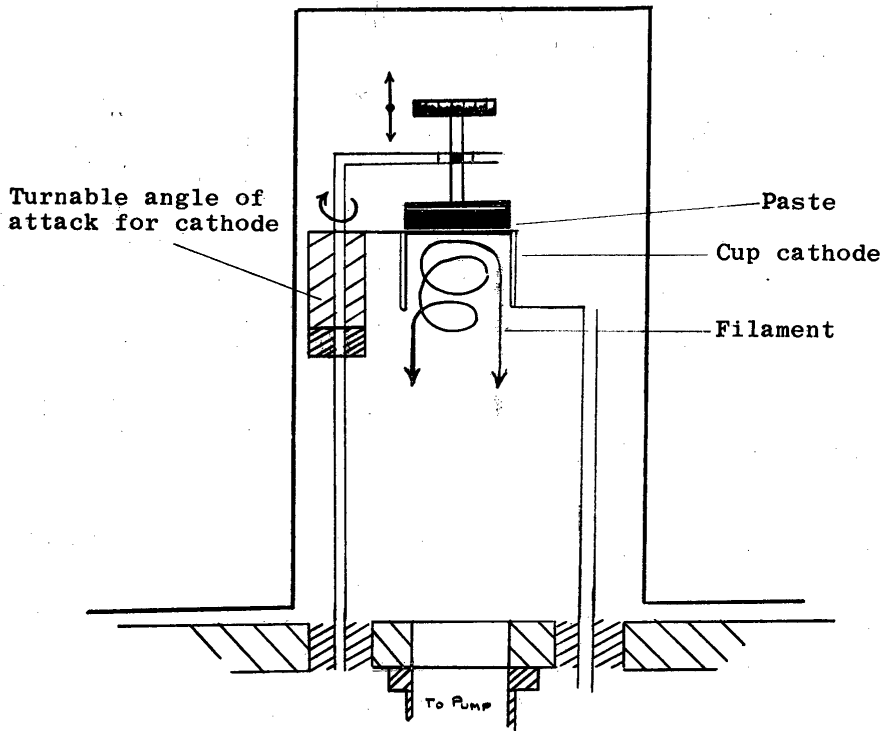


FIGURE 1

Cathode Spraying Process

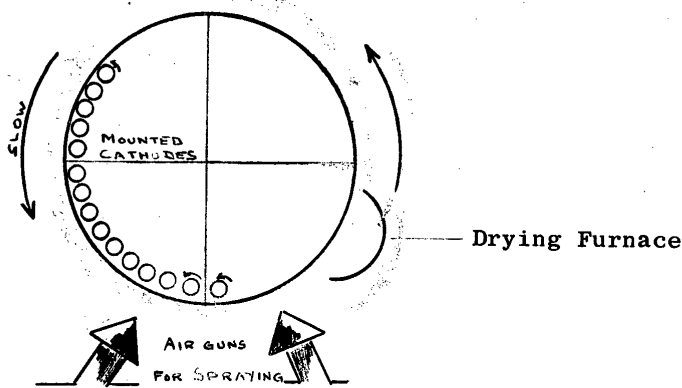
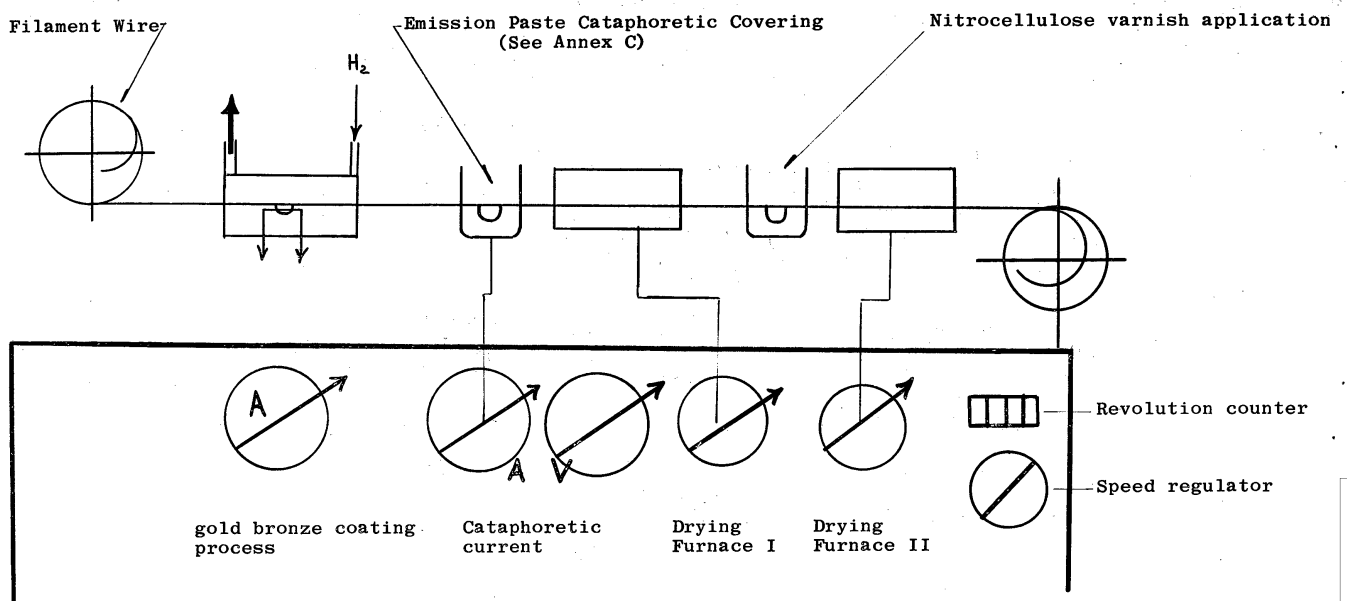


FIGURE 2  
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ANNEX B



Stages in Cathaphoretic Process

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ANNEX C

Detail of Cataphoretic Machine  
(Side View)

